

Amendments to the Claims

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

1-24. (canceled)

25. (new) A method of manufacturing a tyre for a vehicle wheel, comprising:

making a carcass structure on a first-stage drum;

transferring the carcass structure to a second-stage drum;

applying a belt structure to the carcass structure at a radially external position of the carcass structure;

applying a tread band to the belt structure at a radially external position of the belt structure; and

shaping the tyre into a toroidal conformation;

wherein the tyre comprises the carcass structure, comprising:

at least one carcass ply; and

a pair of annular reinforcing structures;

wherein the at least one carcass ply is operatively associated with the annular reinforcing structures,

wherein the annular reinforcing structures are suitable for mounting the tyre on a corresponding rim,

wherein each annular reinforcing structure comprises:

at least one bead core; and

an annular element; and

wherein making the carcass structure comprises:

feeding at least one semi-finished product onto the first-stage drum;

disposing at least one separating element radially external to the at least one semi-finished product;

feeding the at least one carcass ply onto the first-stage drum at a radially external position with respect to the at least one separating element;

disposing the annular elements radially external to the at least one carcass ply;

turning up the at least one carcass ply around at least one of the annular elements;

removing the at least one separating element; and

applying the bead cores.

26. (new) The method of claim 25, wherein two separating elements are disposed on the at least one semi-finished product by an axial movement directed from an outside to an inside from opposite ends of the first-stage drum.

27. (new) The method of claim 25, wherein radial superposition on the first-stage drum is consolidated at points of contact between the at least one semi-finished product and the at least one carcass ply by a pressure device.

28. (new) The method of claim 25, wherein turning up the at least one carcass ply around at least one of the annular elements comprises:

axial movement of the at least one separating element to lift a respective flap of the at least one carcass ply, causing the respective flap to be wrapped around a respective annular element; or

axial movement of the at least one separating element to lift respective flaps of the at least one carcass ply, causing the respective flaps to be wrapped around respective annular elements.

29. (new) The method of claim 28, wherein at an end of the axial movement of the at least one separating element, each bead core is disposed radially external to the respective annular element and substantially adjacent and axially external to the respective flap.

30. (new) The method of claim 29, wherein removing the at least one separating element is followed by disposing each bead core radially external to the respective annular element, while the respective flap is interposed between a respective bead core and the respective annular element.

31. (new) The method of claim 30, further comprising:
pushing the annular elements and underlying semi-finished products in a radially external direction, while maintaining each bead core stationary in a radial position.

32. (new) The method of claim 31, wherein pushing the annular elements and the underlying semi-finished products in a radially external direction continues until the respective bead cores and annular elements substantially take a same radial position,

wherein each annular element is maintained in an axially external position relative to the respective bead core, and

wherein the respective flap is wrapped around the respective annular element and maintained radially internal to the respective bead core or the respective flaps are wrapped around the respective annular elements and maintained radially internal to the respective bead cores.

33. (new) The method of claim 30, further comprising:

pushing the annular elements and underlying semi-finished products in a radially external direction while each bead core rubs on the respective flap, carrying out a compressing and consolidating action of turned-up portions of the at least one carcass ply around at least one of the annular elements.

34. (new) The method of claim 33, wherein pushing the annular elements and the underlying semi-finished products in a radially external direction continues until the respective bead cores and annular elements substantially take a same radial position,

wherein each annular element is maintained in an axially external position relative to the respective bead core, and

wherein the respective flap is wrapped around the respective annular element and maintained radially internal to the respective bead core or the respective flaps are wrapped around the respective annular elements and maintained radially internal to the respective bead cores.

35. (new) The method of claim 28, wherein turning up the at least one carcass ply around at least one of the annular elements is mainly carried out by inflation of at least one inflatable bag.

36. (new) The method of claim 28, wherein turning up the at least one carcass ply around at least one of the annular elements is mainly carried out by presser rollers.

37. (new) The method of claim 25, wherein each annular element comprises a cross-section of elongated shape, tapering at one end.

38. (new) The method of claim 25, wherein the annular elements comprise elastomer material.

39. (new) A drum for manufacturing a tyre for a vehicle wheel, comprising:
a central portion;
two side portions;
at least one transport device for bead cores;

at least one pressure device;

at least one turning-up device for at least one carcass ply; and

a device adapted to radially modify a surface of the drum;

wherein the central portion is operatively associated with the side portions,

wherein the at least one pressure device is adapted to consolidate different semi-finished products with each other,

wherein the at least one turning-up device comprises at least one tubular separating element,

wherein the at least one separating element is open at least at one end,

wherein the at least one separating element is externally associated with the first-stage drum,

wherein the tyre comprises a carcass structure, comprising:

at least one carcass ply; and

a pair of annular reinforcing structures;

wherein the at least one carcass ply is operatively associated with the annular reinforcing structures,

wherein the annular reinforcing structures are suitable for mounting the tyre on a corresponding rim,

wherein each annular reinforcing structure comprises:

at least one bead core; and

an annular element; and

wherein the at least one carcass ply is turned up on at least one of the annular elements.

40. (new) The drum of claim 39, wherein the at least one pressure device comprises a presser roller to consolidate adhesion between the at least one carcass ply and at least one semi-finished product disposed under the at least one carcass ply.

41. (new) The drum of claim 39, wherein the at least one turning-up device is divided into two halves,

wherein each half is disposed axially external to and on opposite sides of the drum, and wherein each half comprises one or more of the separating elements.

42. (new) The drum of claim 41, wherein each half is axially movable, and wherein each half is free to rotate about an axis of the drum.

43. (new) The drum of claim 41, wherein each separating element is of a same diameter as or a smaller diameter than the drum.

44. (new) The drum of claim 41, wherein a plurality of circumferentially-disposed thread elements is provided around each separating element.

45. (new) The drum of claim 39, wherein a second pressure device is associated with the at least one turning-up device.

46. (new) The drum of claim 45, wherein the second pressure device comprises:

at least one inflatable bag;

wherein the at least one inflatable bag is expandable toward a surface of the drum during operation of the drum.

47. (new) The drum of claim 46, wherein the at least one inflatable bag comprises an annular shape,

wherein the at least one inflatable bag is coaxial with the drum, and

wherein the at least one inflatable bag is of larger diameter than the drum.

48. (new) The drum of claim 45, wherein the second pressure device comprises one or more presser rollers.

49. (new) The drum of claim 39, wherein the at least one separating element comprises anti-adhesive, elastic material.